

Just In Time Quick Check

Standard of Learning (SOL) 7.3

Strand: Computation and Estimation

Standard of Learning (SOL) 7.3

The student will solve single-step and multistep practical problems, using proportional reasoning.

Grade Level Skills:

- Given a proportional relationship between two quantities, create and use a ratio table to determine missing values.
- Write and solve a proportion that represents a proportional relationship between two quantities to find a missing value.
- Apply proportional reasoning to convert units of measurement within and between the U.S. Customary System and the metric system when given the conversion factor.
- Apply proportional reasoning to solve practical problems, including scale drawings. Scale factors shall have denominators no greater than 12 and decimals no less than tenths.
- Using 10% as a benchmark, compute 5%, 10%, 15%, or 20% of a given whole number.
- Using 10% as a benchmark, compute 5%, 10%, 15%, or 20% in a practical situation such as tips, tax, and discounts.
- Solve problems involving tips, tax, and discounts. Limit problems to only one percent computation per problem.

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Just in Time Quick Check Teacher Notes

Supporting Resources:

- VDOE Mathematics Instructional Plans (MIPS)
 - [7.3 - Sales Tax, Tip and Discount](#) (Word) / [PDF Version](#)
 - [7.3 - Conversions](#) (Word) / [PDF Version](#)
 - [7.3 - Proportions](#) (Word) / [PDF Version](#)
- VDOE Co-Teaching Mathematics Instruction Plans (MIPS)
 - [7.3 - Sales Tax and Tip](#) (Word) / [PDF Version](#)
- VDOE Algebra Readiness Formative Assessments
 - [SOL 7.3](#) (Word) / [PDF](#)
- VDOE Algebra Readiness Remediation Plans
 - [Practical Problems - Tax and Discount](#) (Word) / [PDF](#)
 - [Problem Solving – Strategies for Finding the Hidden Question](#) (Word) / [PDF](#)
 - [Scale Drawings - Using Proportional Reasoning](#) (Word) / [PDF](#)
 - [Solving Percent Problems Using Proportional Reasoning](#) (Word) / [PDF](#)
 - [Solving Practical Problems Using Proportional Reasoning I](#) (Word) / [PDF](#)
 - [Solving Practical Problems Using Proportional Reasoning II](#) (Word) / [PDF](#)
 - [Solving Practical Problems Using Proportional Reasoning III](#) (Word) / [PDF](#)
- VDOE Word Wall Cards: Grade 7 ([Word](#)) | ([PDF](#))
 - Proportion
 - Ratio Table
 - Scale Factor
 - Proportional Reasoning
 - Proportional Reasoning: Using Benchmarks

Strand: Computation and Estimation

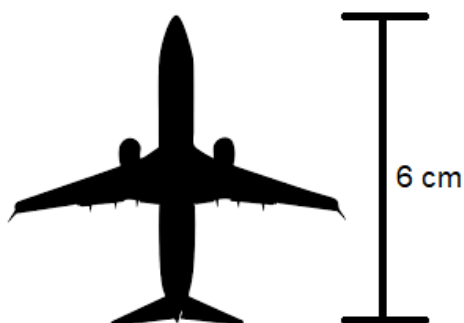
- Other VDOE Resources
 - [eMediaVA: Computation and Estimation Grade 7](#)
- Desmos Activity
 - [Lego Prices](#)

Supporting and Prerequisite SOL: [7.2](#), [6.1](#), [6.5b](#), [6.5c](#), [6.6b](#), [6.12a](#), [6.12c](#), [6.13](#), [5.2a](#), [5.4](#), [5.5b](#), [5.6a](#), [5.6b](#), [5.9a](#), [5.9b](#)

SOL 7.3 - Just in Time Quick Check

1. There are 420 students at Virginia Middle School. The ratio of girls to boys is 4 to 3. Exactly how many more girls are there than boys at Virginia Middle School?

2. A scale drawing of an airplane is shown with a scale of 24 feet = 1 centimeter. What is the length of the actual plane?



3. Breanna purchased 8 oranges for \$10 at the grocery store. Using this information, complete the ratio table below comparing the number of oranges purchased to the total cost in dollars.

Oranges	3		8		12
Cost (dollars)		5	10	12.50	

4. Explain how to find 20% of 160.

5. Jose gets his hair cut for \$12. He gives his barber a 15% tip. How much does he give the barber for a tip?

6. Veronica buys a shirt for \$22.00. If the sales tax is 5.5%, what is the total price Veronica pays for the shirt including tax?
7. Derek wants to buy a skateboard for \$56.00. The store is offering a discount of 5% on all items. What price will Derek pay for the skateboard, not including tax?

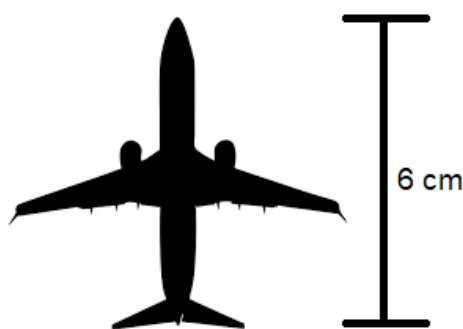
SOL 7.3 - Just in Time Quick Check Teacher Notes

Common Errors/Misconceptions and their Possible Indications

1. There are 420 students at Virginia Middle School. The ratio of girls to boys is 4 to 3. Exactly how many more girls are there than boys at Virginia Middle School?

A common error a student may make is finding the number of boys or girls and not the difference between the girls and boys. Another common error a student may make is using 420 as the number of girls or boys in the school. For example, students might set up the proportion $\frac{4}{3} = \frac{420}{x}$ or something similar. These errors could indicate that students may have difficulty identifying key numbers or phrases in a practical problem. Students may benefit from additional work with practical problems and drawing a picture to represent the problem. These errors also could indicate that students may need additional practice with part to whole ratios. Students may benefit from using tape diagrams to represent the part to whole relationship in problems like this.

2. A scale drawing of an airplane is shown with a scale of 24 feet = 1 centimeter. What is the length of the actual plane?



A common error a student may make is dividing 24 feet by 6 centimeters resulting in an answer of 4 feet. A student may also set up a proportion incorrectly $\left(\frac{6 \text{ cm}}{1 \text{ cm}} = \frac{24 \text{ ft}}{x \text{ ft}}\right)$ and compute the same answer. Both of these errors indicate that a student has not yet developed an understanding of equivalent ratios and the need to align common units. Teachers may want to use the Algebra Readiness Remediation Plan: Scale Drawings - Using Proportional Reasoning with students.

3. Breanna purchased 8 oranges for \$10 at the grocery store. Using this information, complete the ratio table below comparing the number of oranges purchased to the total cost in dollars.

Oranges	3		8		12
Cost (Dollars)		5	10	12.50	

A common misconception a student may have is thinking that a proportional relationship is additive, perhaps noticing the increase in cost in the table and assuming a common amount is being added, perhaps filling in \$2.50 for 3 oranges by subtracting \$2.50 from the \$5 in the next column. This may indicate that students need additional practice finding equivalent ratios and finding missing values in a ratio table. Teachers may want to use the Algebra Readiness Remediation Plan: Solving Practical Problems Using Proportional Reasoning I with students. Additionally, refer to 6.12a (Math 6 Curriculum Framework) for additional examples.

4. Explain how to find 20% of 160.

A common error a student may make is dividing 160 by 20 resulting in an answer of 8. This may indicate that students have not developed an understanding of benchmark percents. Students may benefit from using graph paper or number lines to model benchmark percents of different numbers.

A student may incorrectly set up the proportion as $\frac{20}{100} = \frac{160}{x}$ resulting in an answer of eight hundred. This error indicates that student does not understand part to whole relationships with percent problems. Students may benefit from more practice solving percent problems using benchmark percentages. Refer to the Grade 7 Word Wall Card #13 and VDOE Algebra Readiness Plans-Solving Percent Problems Using Proportional Reasoning for additional examples.

5. Jose gets his hair cut for \$12. He gives his barber a 15% tip. How much money does he give the barber for a tip?

A common error a student may make is finding the whole amount he gives the barber for his haircut, including tip computing an answer of \$13.80. This may indicate that the student does not understand the relationship between part (amount of tip) and whole (total amount). A student making this error may benefit from additional practice with word problems and drawing a picture to represent the problem. Refer to VDOE Co-Teaching Mathematics Instruction Plans 7.3 - Sales Tax-and Tip.

6. Veronica buys a shirt for \$22.00. If the sales tax is 5.5%, what is the total price Veronica pays for the shirt including tax?

A common error a student may make is finding only the amount of sales tax. Another error a student may make is subtracting the amount of tax from \$22.00. Both of these errors may indicate the student does not understand that sales tax is added to the purchase amount to determine the total price. This may indicate that a student does not understand the vocabulary associated with tip, tax, and discount. A student may benefit from more practice using the vocabulary in real world contexts. For additional examples, see VDOE Algebra Readiness Plans-Practical Problems - Tax and Discount.

7. Derek wants to buy a skateboard for \$56.00. The store is offering a discount of 5% on all items. What price will Derek pay for the skateboard, not including tax?

A common error a student may make is finding only the amount of discount. Another error a student may make is adding the amount of discount to the price of the skateboard. Both of these errors may indicate the student does not understand that a discount is subtracted from the purchase amount to determine the total price. See question 6 for more information on strategies and additional practice.